

## CLAIMS

What is claimed is:

1 1. A method comprising:  
2 providing prerequisite information regarding page sub-components of a graphical  
3 user interface (GUI) that are prerequisites to other page sub-components of the GUI;  
4 in response to a request for a destination page of the GUI and with reference to  
5 the prerequisite information, identifying one or more page sub-component prerequisites  
6 of page sub-components associated with the destination page;  
7 determining whether one or more requirements of an instance of an identified  
8 page sub-component prerequisite have been satisfied by invoking a method of the  
9 instance that causes stored information regarding the state of the page sub-component  
10 prerequisite to be retrieved from a current environment/context; and  
11 causing the destination page to be displayed with (1) content associated with the  
12 identified page sub-component prerequisite if any of its one or more requirements have  
13 not been satisfied and (2) content associated with those of the page sub-components  
14 having no page sub-component prerequisites or having page sub-component prerequisites  
15 whose requirements have all been satisfied.

1 2. The method of claim 1 wherein the prerequisite information is stored in a Java  
2 properties file.

1 3. The method of claim 1, further comprising supporting definition of hierarchical  
2 relationships of page sub-component prerequisites by:  
3 iterating through each of the identified page sub-component prerequisites for a  
4 particular page sub-component associated with the destination page in a predetermined

5 order until encountering the first page sub-component prerequisite that has one or more  
6 unsatisfied requirements; and

7 displaying the first page sub-component prerequisite of the identified page sub-  
8 component prerequisites before displaying a second page sub-component prerequisite of  
9 the identified page sub-component prerequisites that has one or more unsatisfied  
10 requirements and that is dependent upon the first page sub-component prerequisite  
11 according to the predetermined order.

1 4. The method of claim 1, wherein each page sub-component has a prerequisite  
2 property and the prerequisite information includes, for each page sub-component that has  
3 one or more page sub-component prerequisites, a string identifying the one or more page  
4 sub-component prerequisites.

1 5. The method of claim 1, wherein the prerequisite information is structured as a list  
2 of attribute-value pairs, and wherein the syntax for identifying a first sub-component,  
3 sub<sub>1</sub>, and a second sub-component, sub<sub>2</sub>, as prerequisites of a third sub-component, sub<sub>3</sub>,  
4 is substantially as follows:

5 sub<sub>3</sub>.prereq = sub<sub>1</sub> sub<sub>2</sub>.

1 6. The method of claim 1, wherein the request for the destination page comprises a  
2 HyperText Transfer Protocol (HTTP) request, and wherein the page sub-components of  
3 the GUI are associated with web pages.

1 7. The method of claim 1, further comprising modifying the prerequisite information  
2 without necessitating recompilation of software code.

1 8. The method of claim 1, wherein said determining whether one or more  
2 requirements of an instance of an identified page sub-component prerequisite have been

3 satisfied includes requesting that a page sub-component prerequisite object verify  
4 whether all its requirements have been satisfied.

1 9. The method of claim 1, wherein page sub-component objects corresponding to the  
2 page sub-components of the GUI and page sub-component prerequisite objects  
3 responsible for ensuring satisfaction of one or more prerequisite conditions are loosely  
4 coupled and may be dynamically associated with each other by way of the prerequisite  
5 information.

1 10. A method of presenting a page requested by a user comprising:  
2 in response to a request for a destination page of a graphical user interface (GUI),  
3 creating an instance of a container to represent the destination page, the container  
4 including a list of sub-components to render;  
5 identifying one or more sub-components associated with the destination page;  
6 for each of the one or more sub-components  
7 determining whether the sub-component has any page sub-component  
8 prerequisites with reference to a set of prerequisite information, the set of  
9 prerequisite information including information regarding sub-components of the  
10 GUI that are prerequisites to other sub-components of the GUI, and  
11 if the sub-component has a page sub-component prerequisite and if one or  
12 more requirements of the page sub-component prerequisite remains unsatisfied,  
13 then adding an instance of the page sub-component prerequisite to the list of sub-  
14 components associated with the container, otherwise adding an instance of the  
15 sub-component to the list of sub-components; and  
16 causing the destination page to be displayed by rendering the output of the  
17 instances on the list of sub-components, whereby page sub-component prerequisites that  
18 have one or more requirements that remain unsatisfied are displayed in place of the  
19 corresponding sub-components.

1 11. A graphical user interface (GUI) system for enforcing page sub-component  
2 prerequisites comprising:  
3 a properties data store including information regarding page sub-components of  
4 the GUI that are prerequisites to other page sub-components of the GUI;  
5 a base agent to respond to requests for a destination page of the GUI, in response  
6 to a request for the destination page, the base agent creating an instance of a container to  
7 represent the destination page and initiating display of the destination page after a list of  
8 page sub-components of the container has been populated; and  
9 a sub-component prerequisite factory decoupling the page sub-components from  
10 their respective page sub-component prerequisites, the sub-component prerequisite  
11 factory to either (1) cause an instance of an identified page sub-component prerequisite to  
12 be added to the list of page sub-components if it determines that one or more  
13 requirements of the identified page sub-component prerequisite are unsatisfied or (2)  
14 cause an instance of the page sub-component to be added to the list of page sub-  
15 components, whereby page sub-component prerequisites that have one or more  
16 unsatisfied requirements are displayed in place of the corresponding page sub-  
17 components.

1 12. The system of claim 11, wherein the prerequisite information is stored in a Java  
2 properties file.

1 13. The system of claim 11, wherein the sub-component prerequisite factory supports  
2 hierarchical relationships of page sub-component prerequisites by:  
3 iterating through each of the identified page sub-component prerequisites for a  
4 particular page sub-component associated with the destination page in a predetermined  
5 order until encountering the first page sub-component prerequisite that has one or more  
6 unsatisfied requirements; and

7 displaying the first page sub-component prerequisite of the identified page sub-  
8 component prerequisites before displaying a second page sub-component prerequisite of  
9 the identified page sub-component prerequisites that has one or more unsatisfied  
10 requirements and that is dependent upon the first page sub-component prerequisite  
11 according to the predetermined order.

1 14. The system of claim 11, wherein each page sub-component has a prerequisite  
2 property and the prerequisite information includes, for each page sub-component that has  
3 one or more prerequisite sub-components, a string identifying the one or more page sub-  
4 component prerequisites.

1 15. The system of claim 11, wherein at least a portion of the information of the  
2 properties data store is structured as a list of attribute-value pairs, and wherein the syntax  
3 for identifying a first sub-component, sub<sub>1</sub>, and a second sub-component, sub<sub>2</sub>, as  
4 prerequisites of a third sub-component, sub<sub>3</sub>, is substantially as follows:

5 sub<sub>3</sub>.prereq = sub<sub>1</sub> sub<sub>2</sub>.

1 16. The system of claim 11, wherein the requests correspond to HyperText Transfer  
2 Protocol (HTTP) requests, and wherein the page sub-components of the GUI are  
3 associated with web pages.

1 17. The system of claim 11, wherein prerequisite relationships among two or more  
2 page sub-components of the page sub-components of the GUI may be modified without  
3 necessitating recompilation of software code by editing the information of the properties  
4 data store.

1 18. The system of claim 11, further comprising page sub-component objects  
2 corresponding to the page sub-components of the GUI and page sub-component  
3 prerequisite objects responsible for ensuring satisfaction of one or more prerequisite

4 conditions are loosely coupled and may be dynamically associated with each other by  
5 way of the prerequisite information.

1 19. A machine-readable medium having stored thereon data representing sequences  
2 of instructions, the sequences of instructions which, when executed by a processor, cause  
3 the processor to:

4 identify one or more page sub-component prerequisites of page sub-components  
5 associated with a destination page of a graphical user interface (GUI) in response to a  
6 request for the destination page and with reference to the prerequisite information  
7 regarding page sub-components of the GUI that are prerequisites to other page sub-  
8 components of the GUI;

9 determine whether one or more requirements of an instance of an identified page  
10 sub-component prerequisite have been satisfied by invoking a method of the instance that  
11 causes stored information regarding the state of the page sub-component prerequisite to  
12 be retrieved from a current environment/context; and

13 cause the destination page to be displayed with (1) content associated with the  
14 identified page sub-component prerequisite if any of its one or more requirements have  
15 not been satisfied and (2) content associated with those of the page sub-components  
16 having no page sub-component prerequisites or having page sub-component prerequisites  
17 whose requirements have all been satisfied.